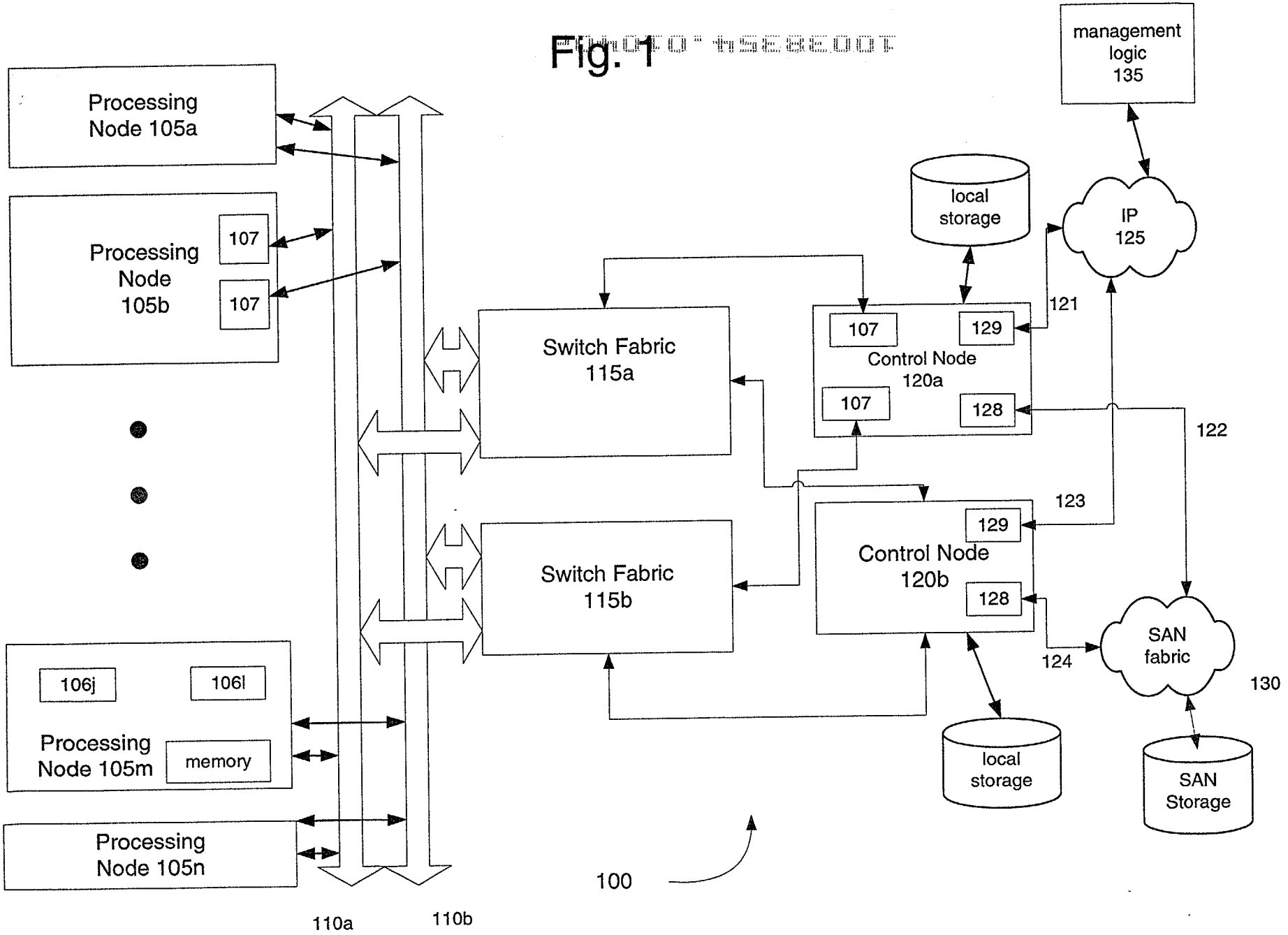
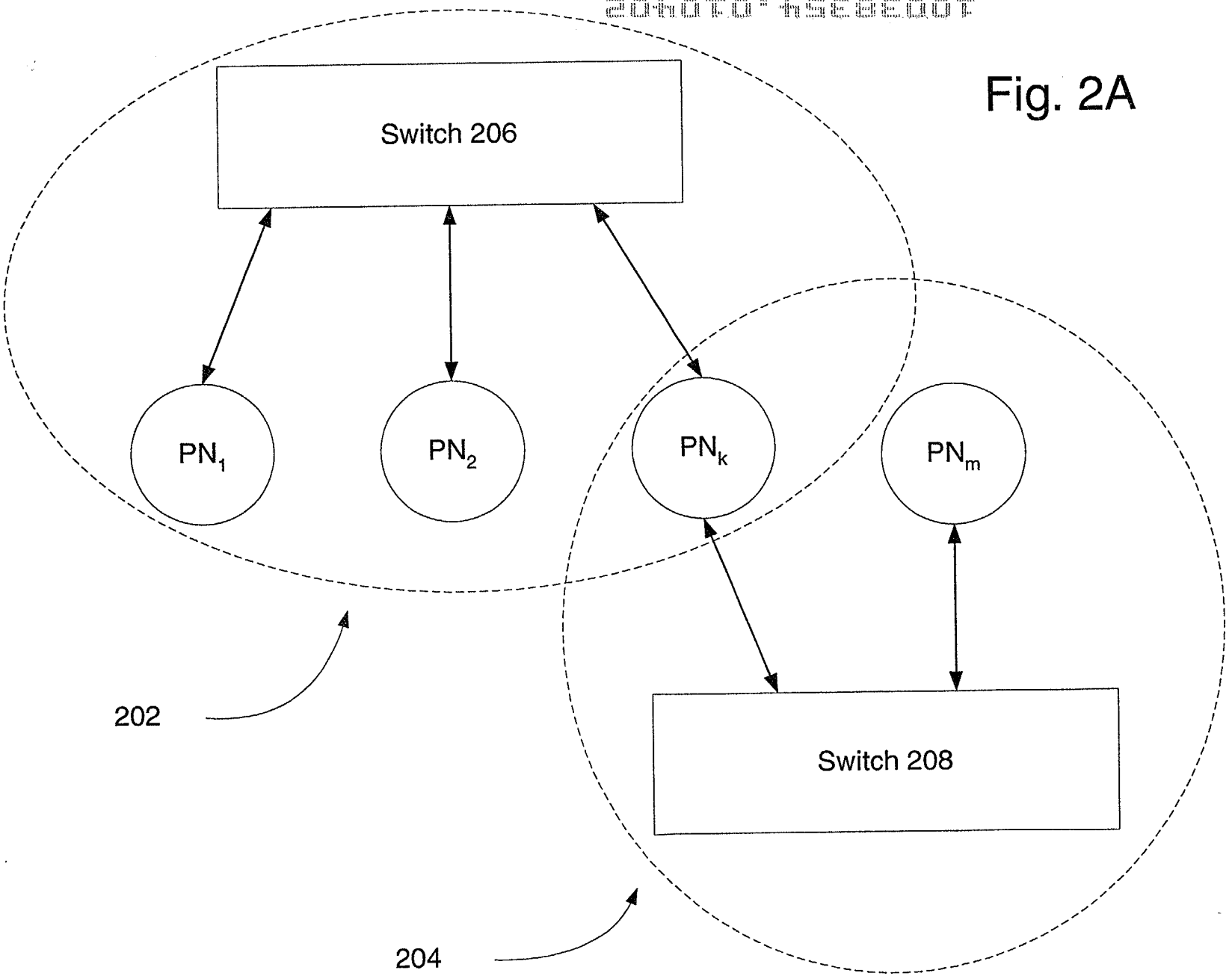
Fig. 1


management logic 135
Processing Node 105a
Processing Node 105b
107
107
local storage
IP 125
121
Switch Fabric 115a
107
129
Control Node 120a
107
128
122
123
Switch Fabric 115b
129
Control Node 120b
128
SAN fabric
130
124
106j
106l
Processing Node 105m
memory
local storage
SAN Storage
Processing Node 105n
100
110a
110b

20070705182600

Fig. 2A



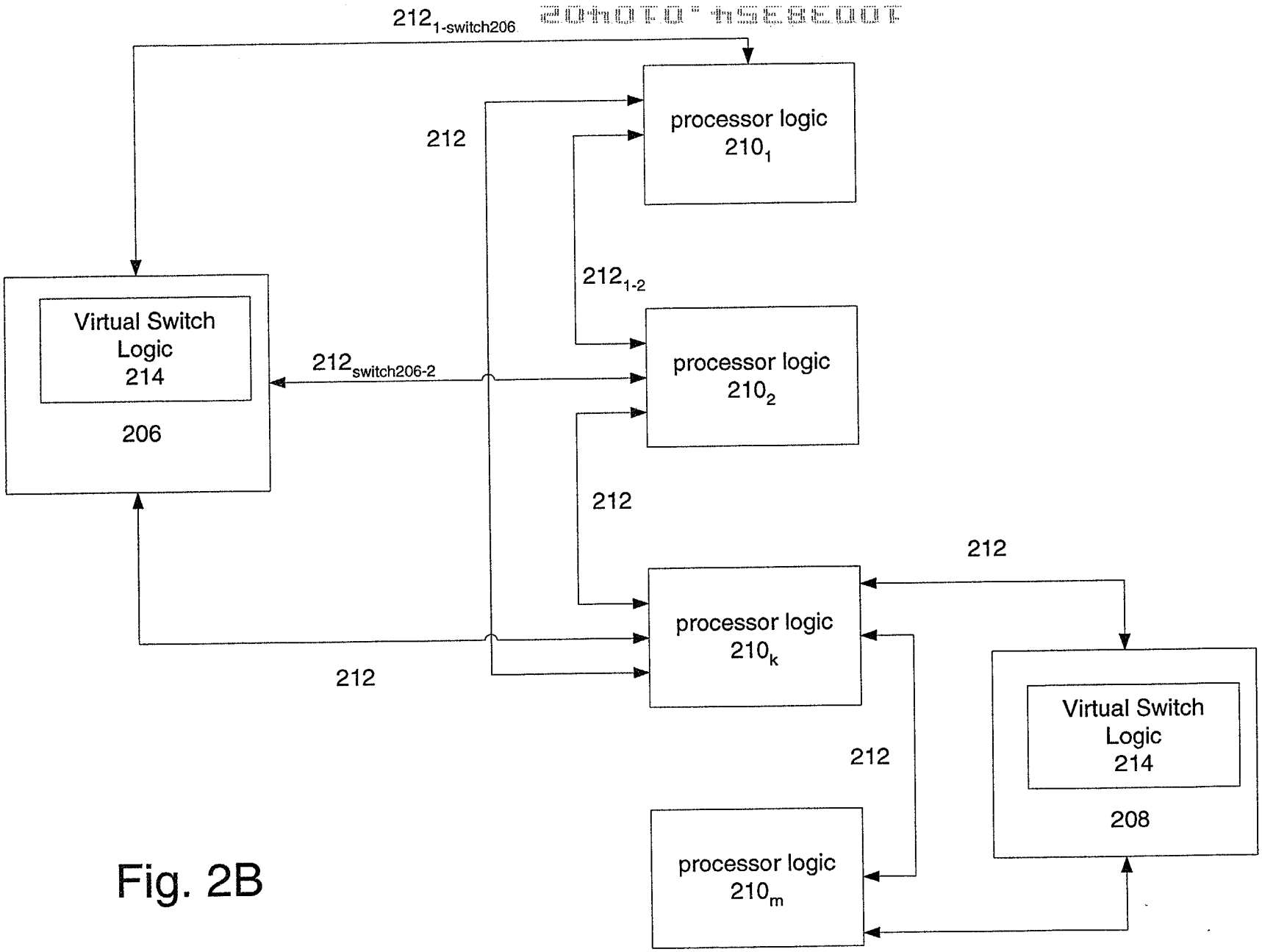

212 1-switch206
processor logic 210 1
212
212 1-2
Virtual Switch Logic 214
206
212 switch206-2
processor logic 210 2
212
212
processor logic 210 k
212
212
Virtual Switch Logic 214
208
processor logic 210 m

Fig. 2B

20m0T0" m5E8E00T

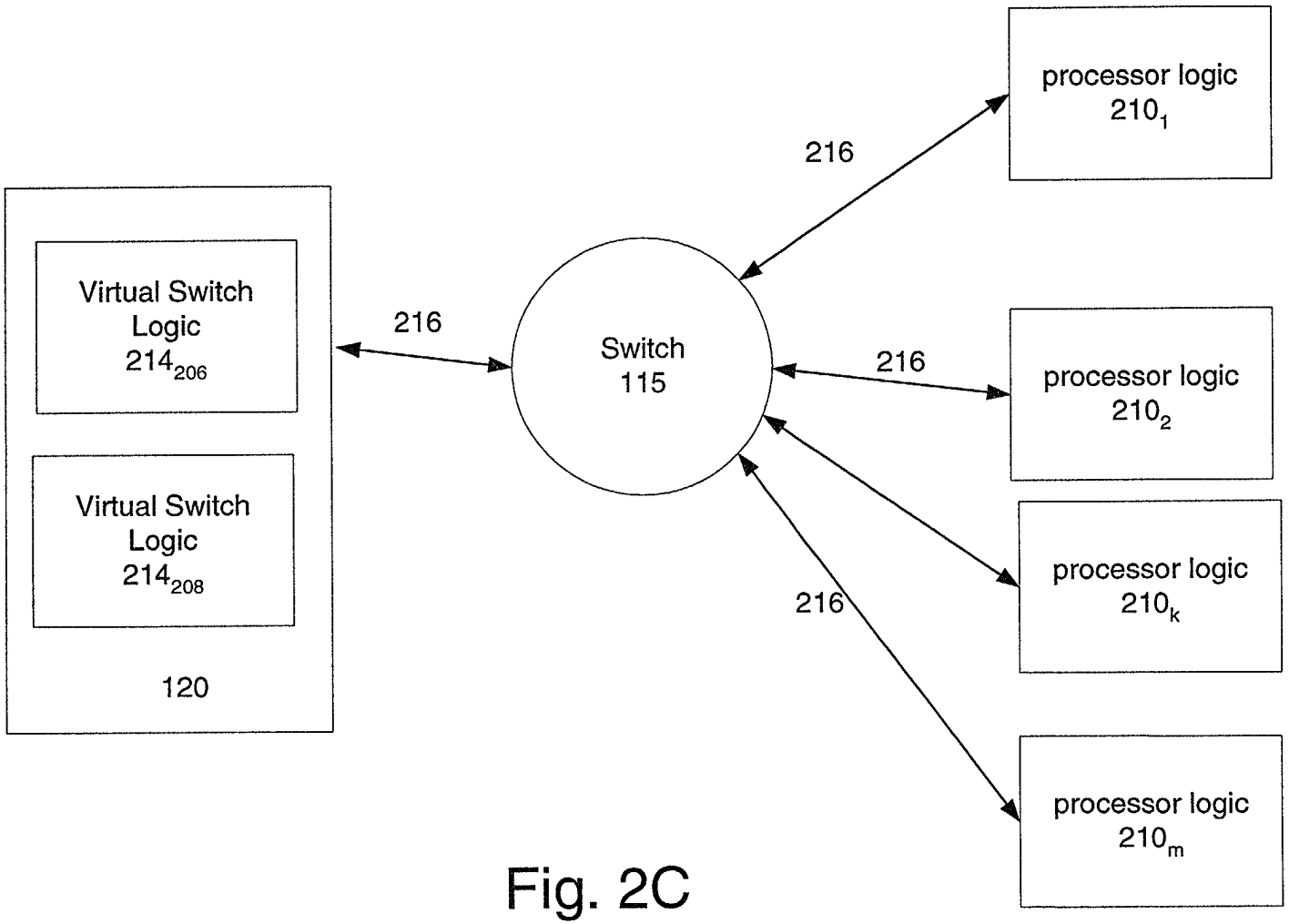



Fig. 2C

Fig. 3A

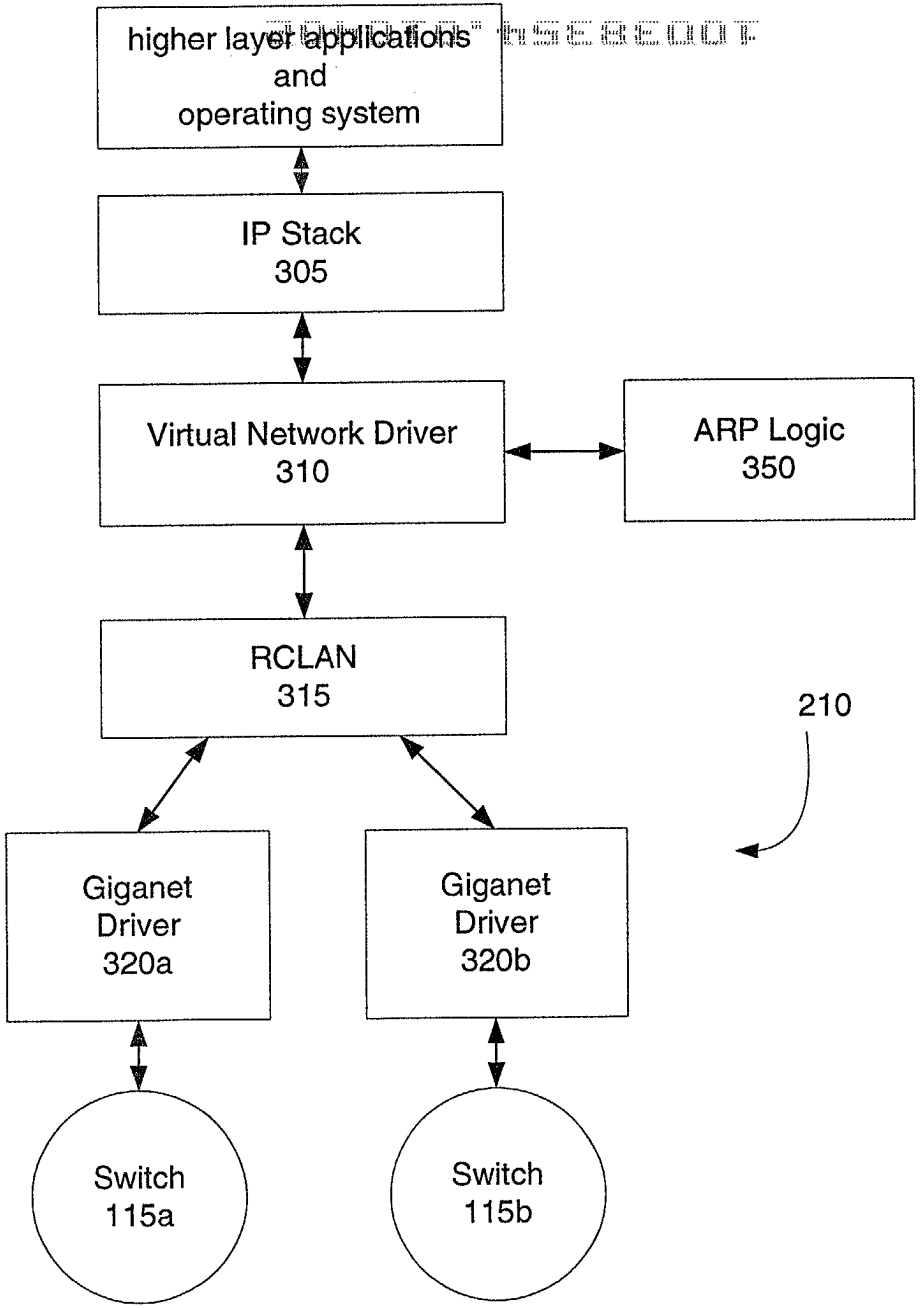
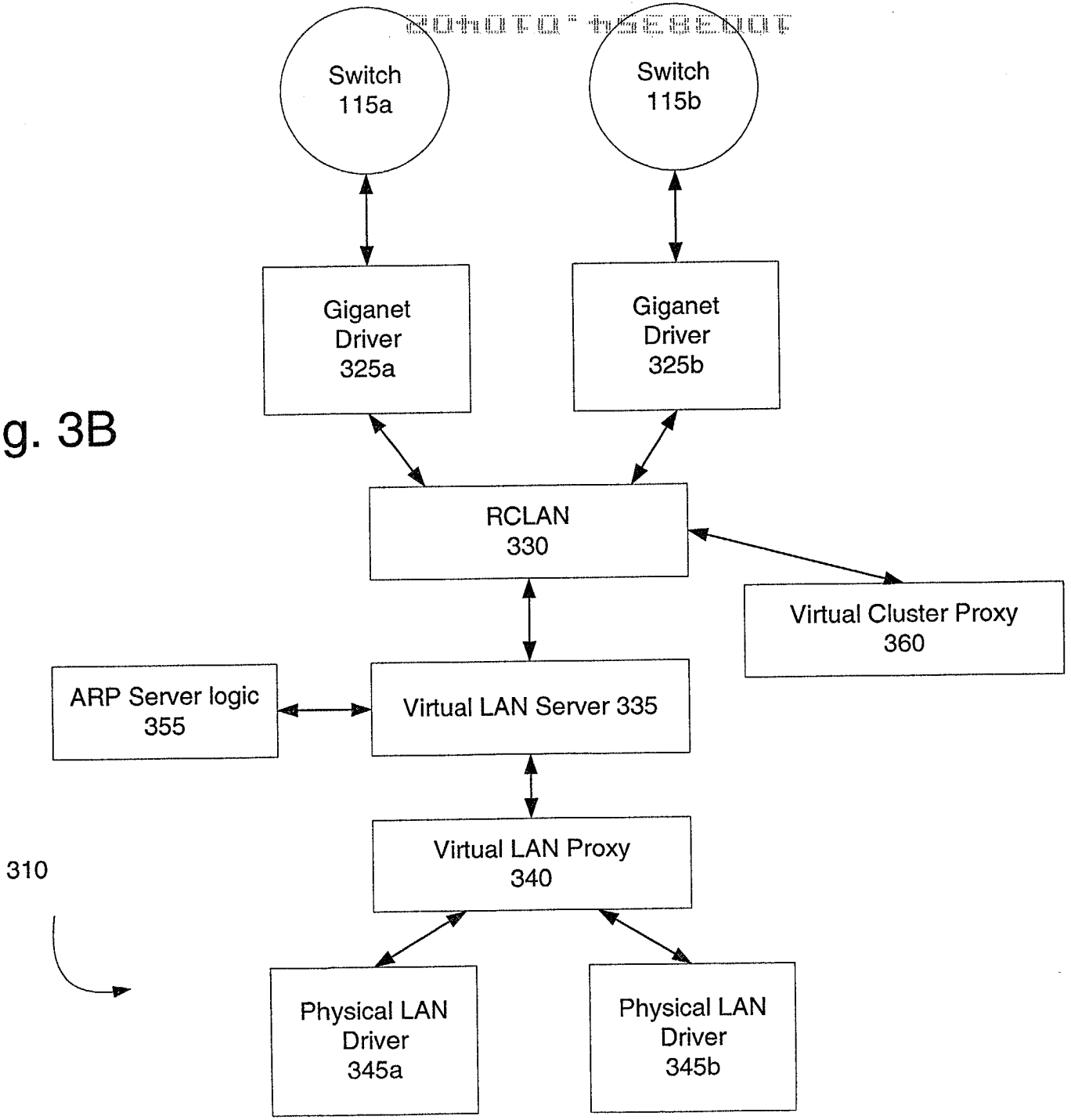

higher layer applications
and
operating system
IP Stack
305
Virtual Network Driver
310
ARP Logic
350
RCLAN
315
210
Giganet
Driver
320a
Giganet
Driver
320b
Switch
115a
Switch
115b

Fig. 3B


Switch
115a
Switch
115b
Giganet
Driver
325a
Giganet
Driver
325b
RCLAN
330
Virtual Cluster Proxy
360
ARP Server logic
355
Virtual LAN Server 335
Virtual LAN Proxy
340
310
Physical LAN
Driver
345a
Physical LAN
Driver
345b

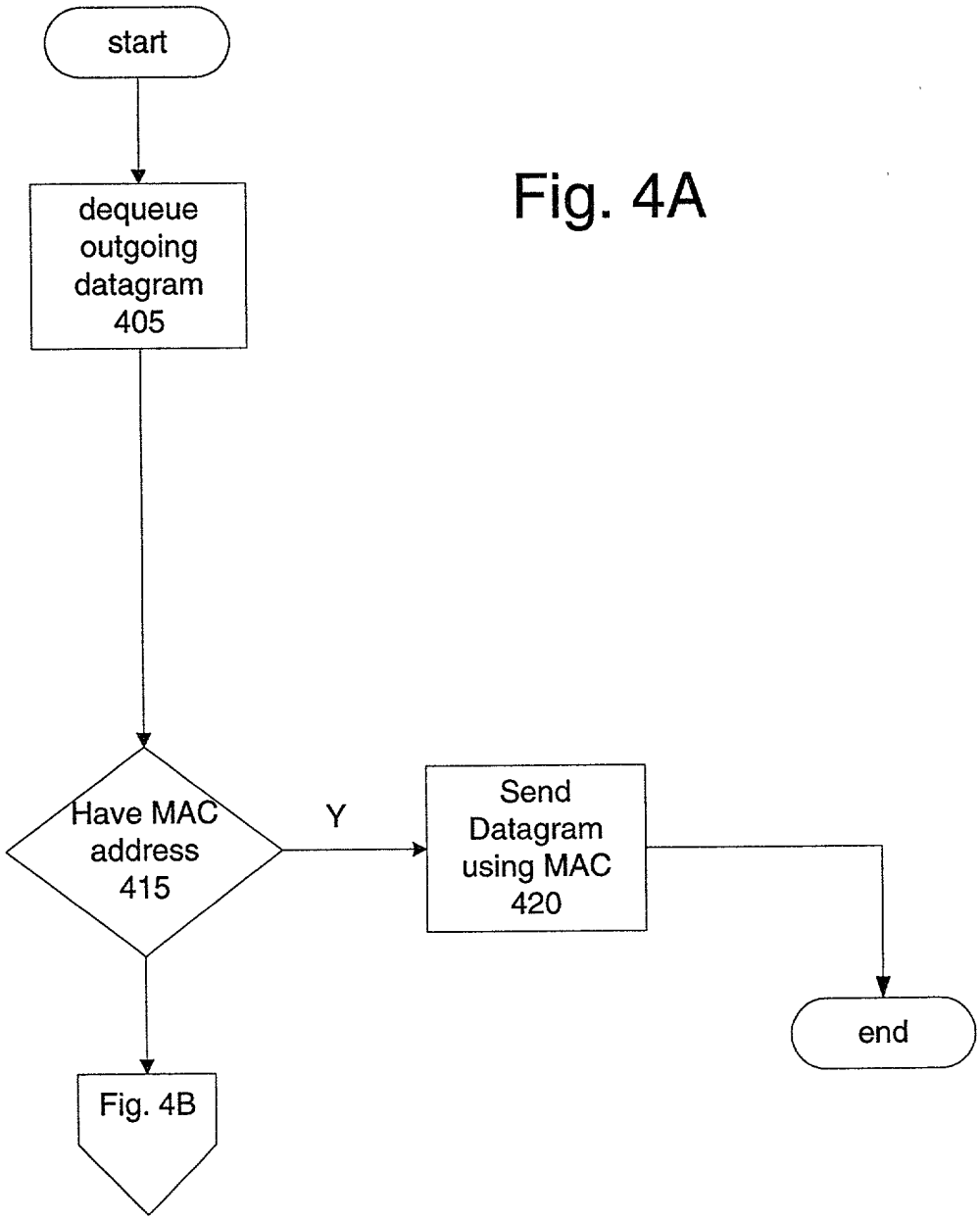

start
dequeue outgoing datagram 405
Have MAC address 415
Y
Send Datagram using MAC 420
end
Fig. 4B

Fig. 4A

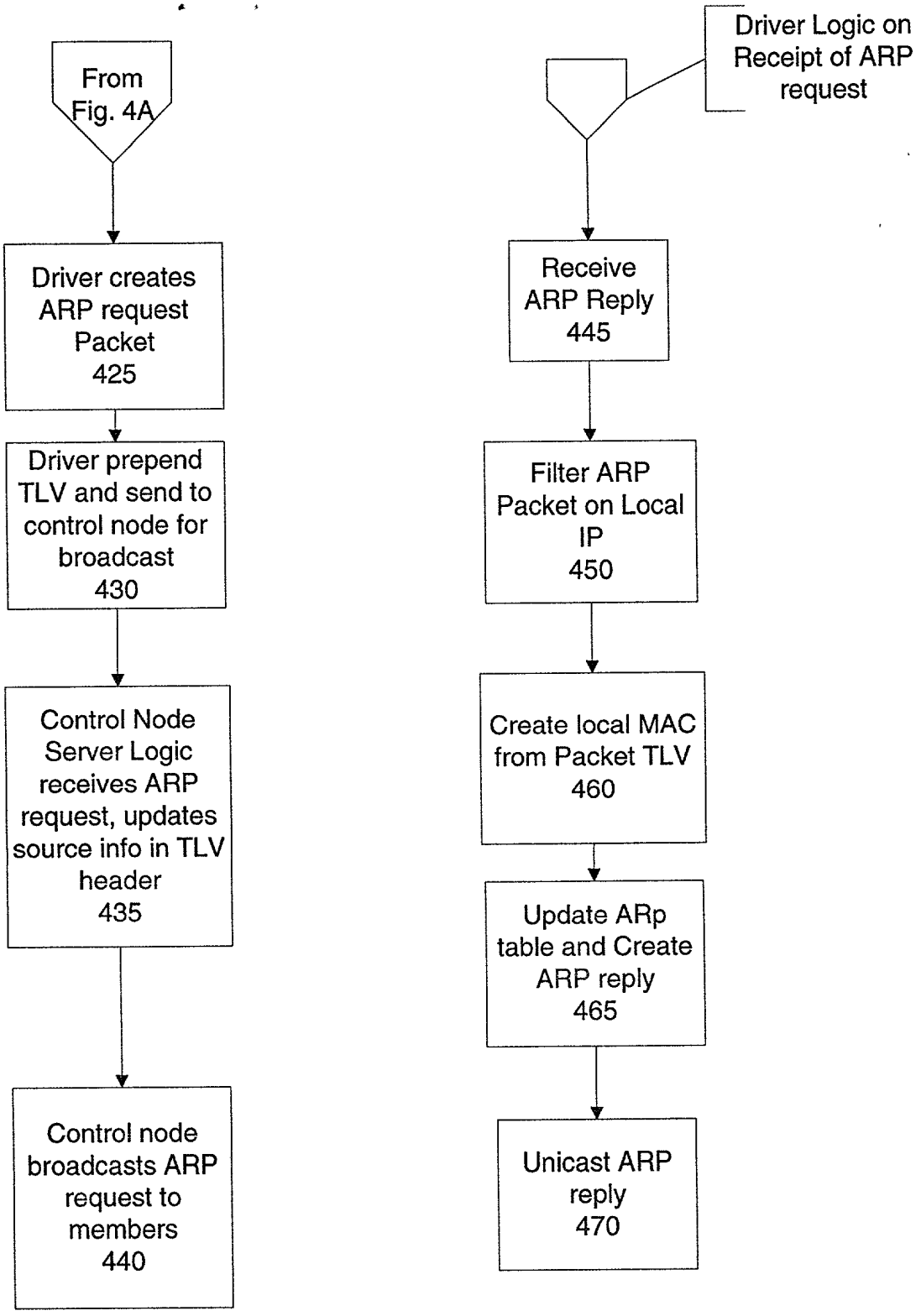

From Fig. 4A
Driver creates ARP request Packet 425
Driver prepend TLV and send to control node for broadcast 430
Control Node Server Logic receives ARP request, updates source info in TLV header 435
Control node broadcasts ARP request to members 440
Driver Logic on Receipt of ARP request
Receive ARP Reply 445
Filter ARP Packet on Local IP 450
Create local MAC from Packet TLV 460
Update ARp table and Create ARP reply 465
Unicast ARP reply 470

Fig. 4B

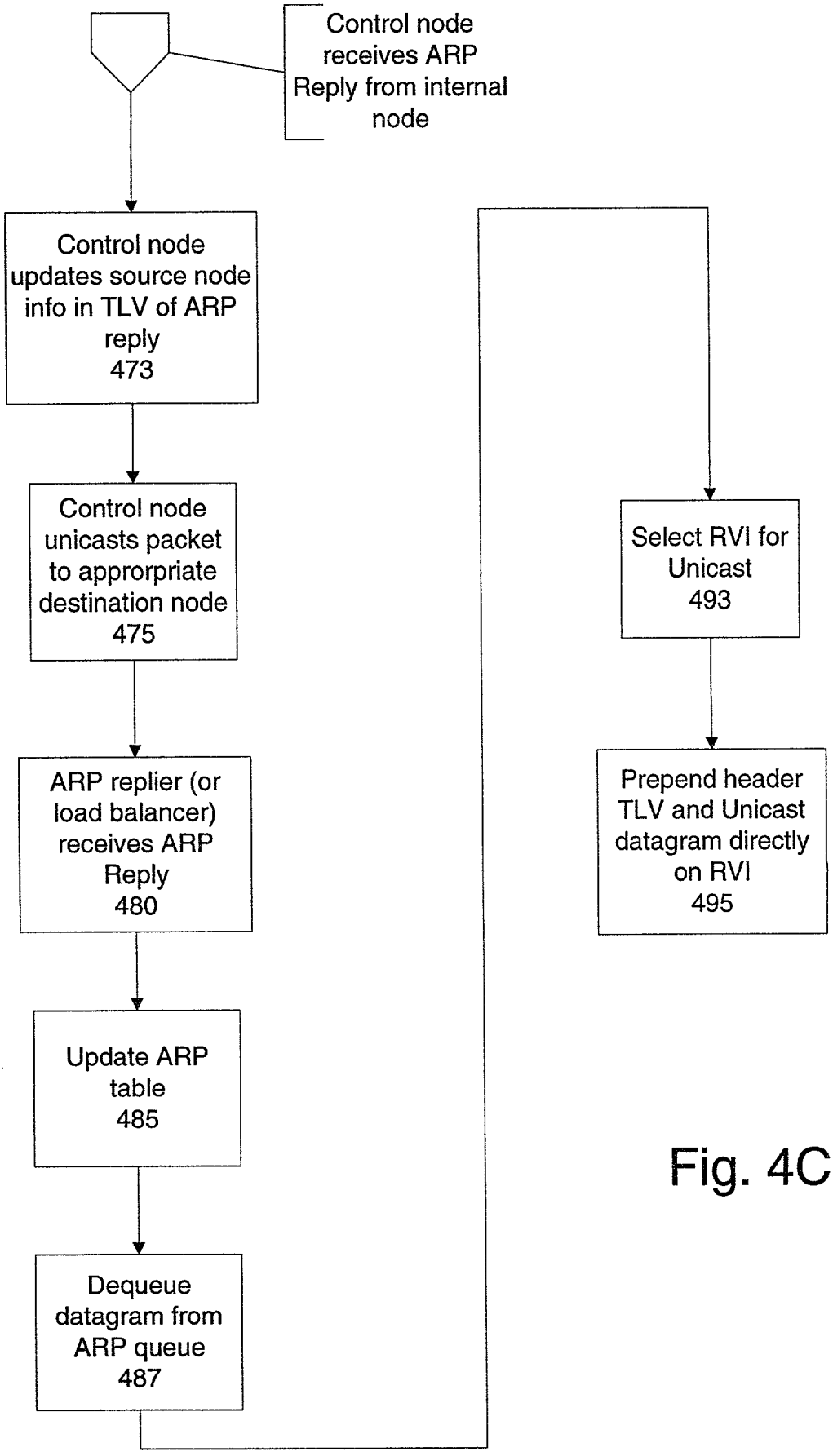

Control node receives ARP Reply from internal node
Control node updates source node info in TLV of ARP reply 473
Control node unicasts packet to approrpriate destination node 475
ARP replier (or load balancer) receives ARP Reply 480
Update ARP table 485
Dequeue datagram from ARP queue 487
Select RVI for Unicast 493
Prepend header TLV and Unicast datagram directly on RVI 495

Fig. 4C

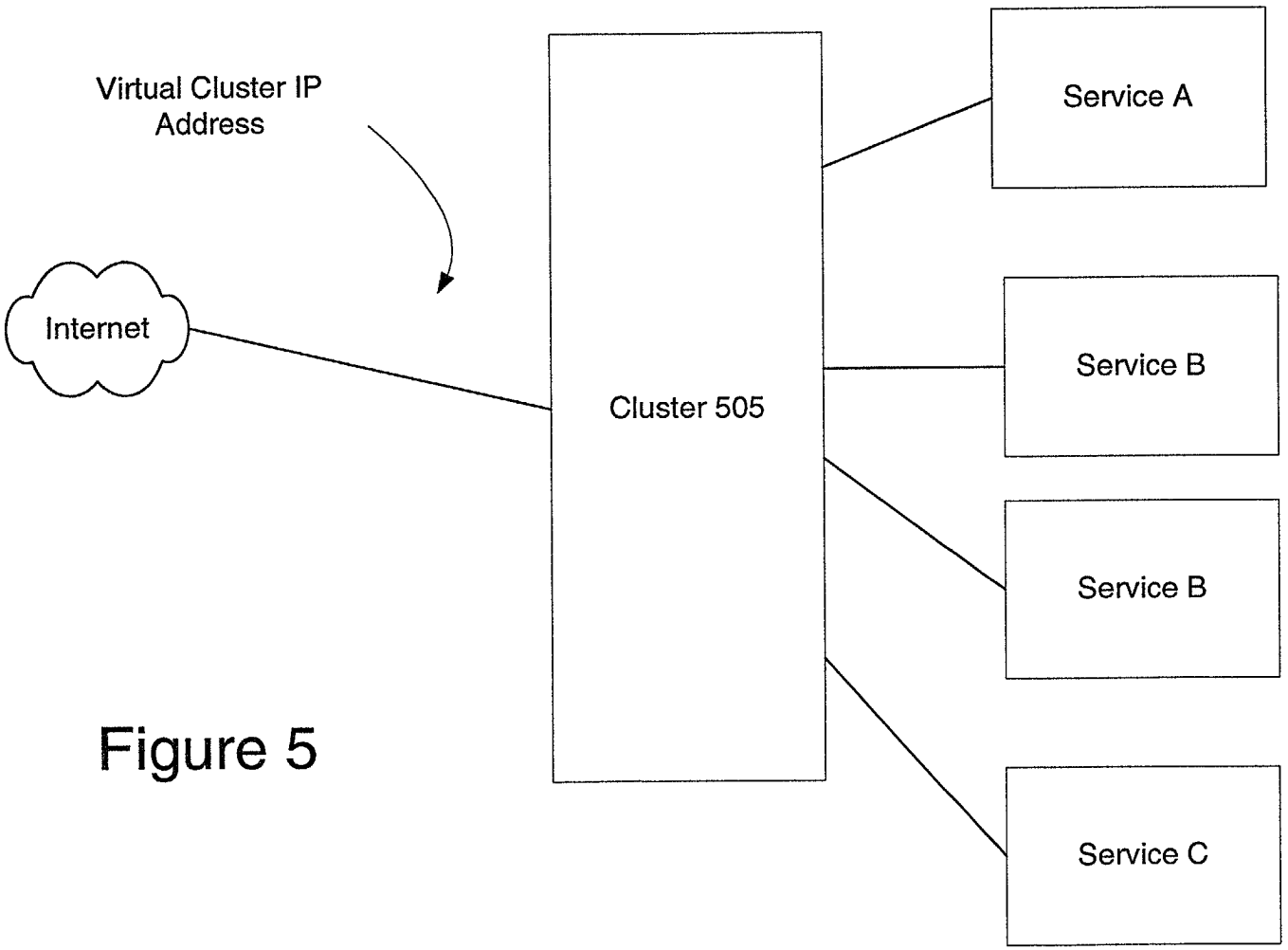
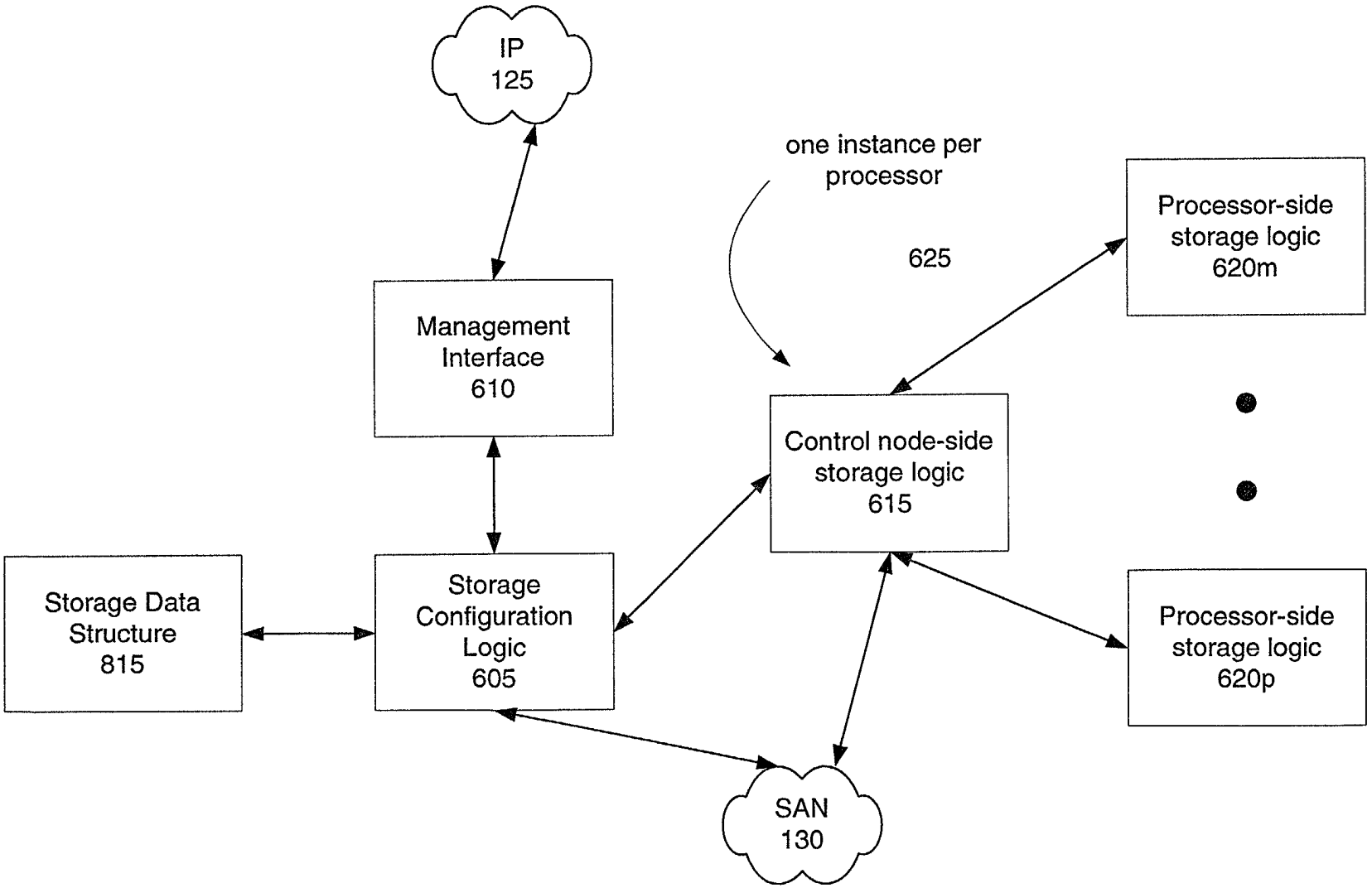

Virtual Cluster IP Address
Internet
Cluster 505
Service A
Service B
Service B
Service C

Figure 5

Fig. 6


IP
125
one instance per
processor
625
Processor-side
storage logic
620m
Management
Interface
610
Control node-side
storage logic
615
Storage Data
Structure
815
Storage
Configuration
Logic
605
Processor-side
storage logic
620p
SAN
130

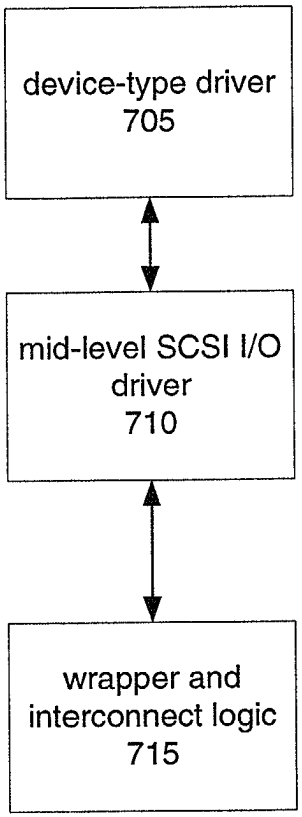

device-type driver
705
mid-level SCSI I/O
driver
710
wrapper and
interconnect logic
715

Fig. 7

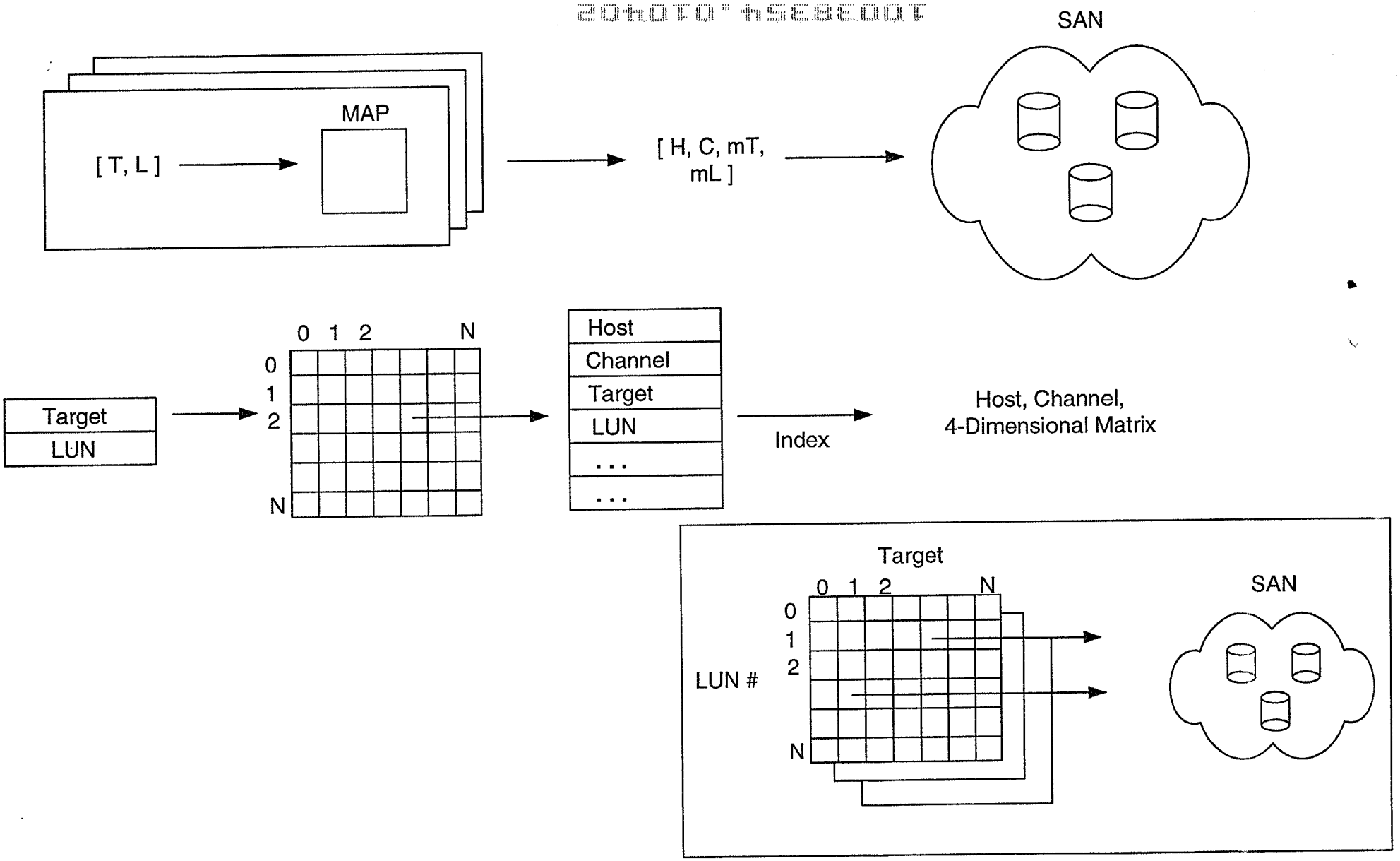

SAN
MAP
[ T, L ]
[ H, C, mT, mL ]
0 1 2 N
0
1
2
N
Target
LUN
Host
Channel
Target
LUN
. . .
. . .
Index
Host, Channel, 4-Dimensional Matrix
Target
0 1 2 N
0
1
2
N
LUN #
SAN

Fig. 8

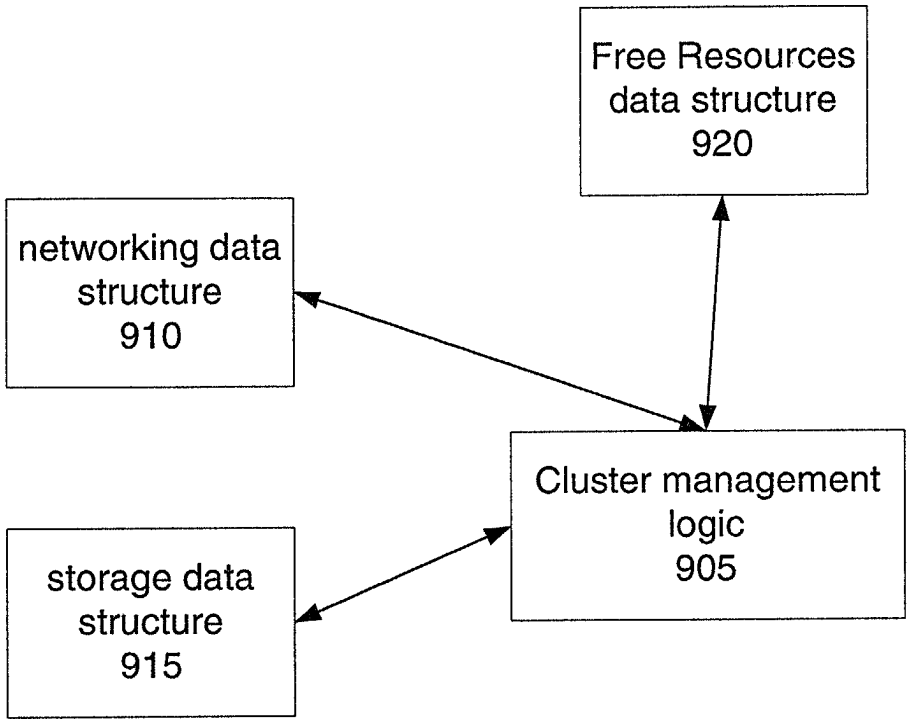

Free Resources
data structure
920
networking data
structure
910
Cluster management
logic
905
storage data
structure
915

Fig. 9